Details of Awarded Projects for the First Exploiting Distributed Generation Programme (EDGE) Grant Call

Title	Description	Project Team
Micro-grid Digital Twin Development for Effective Energy Management and Deployment	The project will develop a plug-and-play digital twin model of an existing lab-based microgrid, using real-time data collected as well as accelerated degradation test of Photovoltaic and Lithium-Ion batteries. This will enable future replication of other physical microgrids in Singapore's context with reduced adaptation effort. The digital twin may be tested at the Multi-Energy Microgrid at SIT's Punggol Campus to potentially simulate the interconnection with islanded grids. This will promote reliability and stability of power provision in events of power surges or outages. The validation process together with the multi-microgrid interconnection topology and control algorithm can further be explored for commercialisation.	**Principal Investigator:** Wang Aimin, SP Group Pte Ltd **Partner Organisation:** Singapore Institute of Technology (SIT)
Optimisation of Energy Management in Multiple Micro-grids System Based on Predictive Control and Artificial Intelligence	The project will develop an integrated real-time optimised energy management system based on artificial intelligence and predictive control to effectively manage the exchange of energy between multiple microgrids, which can have very different operating characteristics and dynamics. The system will be piloted at the Multi-Energy Microgrid at SIT's Punggol Campus to potentially be reconfigured into multiple nano- and DC grids that can interconnect with one another for power-sharing from the main distribution grid. The outcomes of this	**Principal Investigator:** Yu Ming, Power Automation Pte Ltd **Partner Organisations:** SIT, National University of Singapore (NUS)

	project will be able to promote the adoption of renewable solar PVs, reduce carbon emissions and increase energy efficiency.	
Platform for Interconnected Micro-grid Operation	The project will develop an integrated Energy Management System controller and microgrid planning and optimisation tool. It will develop and integrate software modules for different elements, e.g., user behaviour and social acceptance of the flexible loads. The platform will be piloted at the Multi-Energy Microgrid at SIT's Punggol Campus to potentially be positioned as a cost-optimal tool for the operation of the microgrid via flexible Distributed Energy Sources (DES). With realistic data collected, the framework may be readily applied without much additional adaptation effort.	**Principal Investigator:** Romain Migné, EDF Lab Singapore Pte Ltd **Partner Organisations:** SIT, TUMCREATE Ltd, Nanyang Technological University (NTU)